CLAIMS

1. Imaging apparatus comprising:

a radiation source for generating an imaging beam;

a camera array comprising a plurality of cameras responsive to the imaging beam and arranged adjacent one another, each camera having an output for generating image signals;

drive means for moving the radiation source and the camera array relative to a subject;

signal processor means arranged to receive image signals from the data output of each camera and to generate composite image data therefrom;

memory means for storing the composite image data;

output means for displaying an image generated from the composite image data; and

control means responsive to the image signals and/or the composite image data to control the operation of the drive means according to the intensity of the imaging beam.

2. Imaging apparatus according to claim 1 wherein the radiation source is an X-ray source and the cameras comprise scintillators and associated charge-coupled devices for generating digital image data signals.

3. Imaging apparatus according to claim 1 or claim 2 wherein the camera array is arranged so that fields of coverage of adjacent cameras overlap in a direction transverse to the direction of movement of the camera array, so that the camera array provides full coverage of an elongate imaging zone defined thereby.

4. Imaging apparatus according to claim 3 wherein each camera has an active area with a parallelogram shape, with adjacent ends of the respective active areas abutting, so that the coverage of adjacent cameras overlaps in a relatively narrow transition zone extending transversely to the direction of scanning.

5. Imaging apparatus according to claim 3 or claim 4 wherein the signal processor means comprises a digital signal processor arranged to apply a compensation algorithm to the image data signals to compensate for relative misalignment or distortion of the cameras.

6. Imaging apparatus according to claim 5 wherein the compensation algorithm is arranged to compensate for misalignment of each image pixel with respect to both x- and y- axes, the y-axis corresponding to the direction of scanning and the x-axis being transverse to the direction of scanning.

7. Imaging apparatus according to claim 6 wherein the compensation algorithm is arranged first to compensate for errors in the positioning of pixels in the direction of the y-axis, and then in the direction of the x-axis to compensate for unexposed and overlapping pixels in the transition zones between the cameras.

8. Imaging apparatus according to any one of claims 1 to 7 wherein the control means is arranged to measure variations in the intensity of the

imaging beam, and to generate drive control signals to vary the speed of the drive means, to maintain the effective intensity at a constant level.

9. Imaging apparatus according to any one of claims 1 to 7 wherein the control means is arranged to carry out intensity compensation by means of software correction of the image data signals using measured information regarding intensity fluctuations in the imaging beam.

10. Imaging apparatus according to any one of claims 1 to 9 wherein the drive means has an encoder associated therewith for generating clock signals related to the movement of the radiation source and the camera array, and the control means includes a clock conditioning circuit responsive to the clock signals to generate timing signals which are used to synchronise the imaging operation of the camera array with the movement thereof.

11. Imaging apparatus according to any one of claims 1 to 9 wherein the control means includes a reference clock circuit which is used to generate timing signals for controlling both the operation of the drive means and the camera array, so that the imaging operation of the camera array is synchronised with the movement thereof.

12. Imaging apparatus according to any one of claims 1 to 11 wherein each camera defines a plurality of imaging pixels, the outputs of at least some of the pixels being combined according to a predetermined scheme to improve the signal-to-noise ratio of the image signals.

13. Imaging apparatus according to claim 12 wherein the cameras are adapted to combine the outputs of pixels which are adjacent in the

direction of movement of the radiation source and the camera array at the time of generation of the image signals.

14. Imaging apparatus according to claim 13 wherein the signal processor means is adapted to process the image signals to combine the outputs of pixels which are adjacent in a direction transverse to the direction of movement of the radiation source and the camera array.

15. Imaging apparatus substantially as herein described and illustrated.